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(12) **United States Patent**
Kawamura et al.(10) **Patent No.:** **US 7,939,100 B2**
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- Int. Cl.**

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- U.S. Cl.**
- 424/448; 424/449; 514/649

- (58)
- Field of Classification Search**
- None
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- See application file for complete search history.

U.S. PATENT DOCUMENTS

5,185,212 A * 2/1993 Spada et al. 428/483
5,254,348 A * 10/1993 Hoffmann et al. 424/449
5,866,157 A * 2/1999 Higo et al. 424/448
5,948,433 A * 9/1999 Burton et al. 424/448
6,632,906 B1 * 10/2003 Kamiyama 526/316

FOREIGN PATENT DOCUMENTS

JP 64-036669 2/1989
JP 01-178566 7/1989
JP 05-194202 8/1993
JP 05-310559 11/1993
JP 06-108033 4/1994
JP 07-238203 9/1995
JP 09-301854 11/1997
JP 11-228395 8/1999
JP 2002-363069 12/2002
JP 2003-300868 10/2003
JP 2003-313122 11/2003
WO 86/06281 * 11/1986
WO WO97/14411 4/1997
WO WO 97/14411 * 4/1997
WO WO2004/112760 12/2004

* cited by examiner

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Ruggiero & Perle, L.L.P.(57) **ABSTRACT**

The present invention provides a tulobuterol adhesive patch comprising (a) a support, (b) an acrylic pressure-sensitive adhesive layer containing the percutaneously absorbing drug tulobuterol and if necessary a lipophilic oily plasticizer, and (c) a release liner, laminated in that order, wherein the acrylic pressure-sensitive adhesive is a copolymer obtained by copolymerizing an acrylic monomer which is acetoxystyryl (meth) acrylate with one or more other vinyl monomers, to yield a tulobuterol adhesive patch with excellent release and skin permeability of tulobuterol from the pressure-sensitive adhesive layer, low skin irritation and excellent safety.

1 Claim, No Drawings